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**From:** Anita Singh [asingh428@gmail.com]  
**Sent:** 4/4/2017 6:44:26 PM  
**To:** Kappelman, David [Kappelman.David@epa.gov]  
**CC:** LEE, LILY [LEE.LILY@EPA.GOV]; Nguyen, Lyndsey [Nguyen.Lyndsey@epa.gov]; Anita Singh [asingh428@gmail.com]  
**Subject:** Re: North Pier excerpts of resampling in K-40 anomaly areas

Dave - Lily specifically asked me to perform evaluations for Units 1,7,8, 10, and 11.

What I have found so far: Data collected during Sys-2 phase on dates 5-31-12 and 6-4-12 represent anomalous activities. Note that on 6-4-12, only Survey unit 7 was sampled during Sys-2.

HOWEVER - I also performed evaluations on the combined data from all survey units including units: 2,3,4,5,6 and 9.

Those evaluations are described in Section 1 - Figures 1 through 9 of the TM which was just delivered to you.

Our evaluations based upon the entire data set confirm that anomalous activities occurred during Sys-2 phase on May 31 and June 4, 2012.

Note that there are no Sys-2 data for Survey units 2,3,4,5,6, and 9.

No sampling was performed in this units on anomalous dates.

If deemed necessary - we can perform evaluations for these units in future.

Regards.

PS: Feel free to ask me any questions you may have about the TM delivered to you today.

Anita

On Tue, Apr 4, 2017 at 11:32 AM, Kappelman, David <[Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)> wrote:

Anita,

Thanks for the data summary.

Point of Information:

Did you perform the statistical test on all of the survey units for the North Pier or just 1,7,8,10, and 11?

Dave

**From:** Anita Singh [mailto:[asingh428@gmail.com](mailto:asingh428@gmail.com)]

**Sent:** Tuesday, April 04, 2017 2:14 PM

**To:** Kappelman, David <[Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)>; Anita Singh <[asingh428@gmail.com](mailto:asingh428@gmail.com)>; LEE, LILY <[LEE.LILY@EPA.GOV](mailto:LEE.LILY@EPA.GOV)>; Nguyen, Lyndsey <[Nguyen.Lyndsey@epa.gov](mailto:Nguyen.Lyndsey@epa.gov)>

**Subject:** Re: North Pier excerpts of resampling in K-40 anomaly areas

Dave,

Time is just right,

Attached please find a TM - summarizing our findings for Survey Units 8, 10, and 11 of North Pier.

You should already have the report summarizing findings for Survey Units 1 and 7 which Lily shared around March 20.

Thanks.

Let me know if you have any questions.

PS: Felicia Barnett, Director SCMTSC, EPA will be sending the TM to you all as well.

Anita

Regards,

Anita

On Tue, Apr 4, 2017 at 10:51 AM, Kappelman, David <[Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)> wrote:

I can assist with comparing what Anita finds and what the Navy previously found for anomalies on the North Pier Survey units, but we probably should see what if the CH2M Hill finds any additional anomalies.

Dave

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**From:** LEE, LILY  
**Sent:** Saturday, April 01, 2017 12:25 PM  
**To:** Kappelman, David <[Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)>; Nguyen, Lyndsey <[Nguyen.Lyndsey@epa.gov](mailto:Nguyen.Lyndsey@epa.gov)>  
**Cc:** Anita Singh <[asingh428@gmail.com](mailto:asingh428@gmail.com)>; [juanita.bacey@dtsc.ca.gov](mailto:juanita.bacey@dtsc.ca.gov)  
**Subject:** FW: North Pier excerpts of resampling in K-40 anomaly areas

Dear Dave and Lyndsey,

Anita will use her methods to analyze Survey Units 8, 10, and 11 at the North Pier. After she's done with that, could you please compare it to the results found from resampling? I have attached the North Pier Excerpts from the full Tetra Tech resampling description. In addition, In case you need it for context, I have just sent you a share invitation to the full 217 MB file. In addition, below is a link to the same document.

[https://usepa-my.sharepoint.com/personal/lee\\_lily\\_epa\\_gov/Documents/Share%20Hunters%20Point%20Radiation/Investigation%20of%20Anomalous%20Soil%20Samples%20at%20HPNS.pdf](https://usepa-my.sharepoint.com/personal/lee_lily_epa_gov/Documents/Share%20Hunters%20Point%20Radiation/Investigation%20of%20Anomalous%20Soil%20Samples%20at%20HPNS.pdf)

Dear Nina, Can you help in case they need more information about the North Pier?

This 2014 report doesn't have all the data. Those are in the FSSR. Nina from DTSC sent me information about that. While I'm gone, you can ask her for more information/context. She can contact CDPH for you if that helps for context.

In addition, here is a link to the review that CDPH did of the FSSR for the North Pier:

[http://www.envirostor.dtsc.ca.gov/public/final\\_documents2.asp?global\\_id=38440003&doc\\_id=60383376](http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=38440003&doc_id=60383376)

I have attached a 2 MB file giving the text only for the FSS for the North Pier. (thanks Nina!) I will separately send you access to the 24 MB version with appendices through Appendix D through One Drive that is the largest version that Nina could send me. Here is a link to this file.

[https://usepa-my.sharepoint.com/personal/lee\\_lily\\_epa\\_gov/Documents/Share%20Hunters%20Point%20Radiation](https://usepa-my.sharepoint.com/personal/lee_lily_epa_gov/Documents/Share%20Hunters%20Point%20Radiation)

If you need more, then Nina (Juanita) Bacey has the full electronic version. I am cc'ing her.

In addition, Pat from the Navy stated that the K-S test found all the North Pier anomalies except the Cs-137 on June 4. They are putting it into a format that is easier to understand. They will send that to us soon. Could you please review that in my absence? Feel free to give comments directly to the Navy informally in my absence through phone or email with the appropriate caveats if your communication is internal, pre-decisional, and deliberative. But we'd have to wait for John to return to review and approve if we want to give formal comments.

I appreciate your help!!

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**From:** LEE, LILY

**Sent:** Thursday, March 30, 2017 12:28 PM

**To:** David Kappelman ([Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)) <[Kappelman.David@epa.gov](mailto:Kappelman.David@epa.gov)>; 'Anita Singh' <[asingh428@gmail.com](mailto:asingh428@gmail.com)>

**Subject:** North Pier excerpts of resampling in K-40 anomaly areas

The Navy found locations where K-40 concentrations were anomalous. In 2012, Tetra Tech resampled areas in the North Pier, under direct Navy oversight. Below is a summary of what they found. Attached are relevant excerpts from the full document. If you want, I can also excerpt the details.

This might help us select any more areas on North Pier where more analysis could be helpful

*October 24 through November 28, 2012*

#### **Additional Systematic Sampling**

From October 24 through November 28, the HPNS team took action to collect systematic samples in these areas to determine if the radionuclide signature of low K-40, Ra-226, and progeny could be replicated. An additional surveillance was conducted by Greg Joyce on October 24, 2012, for B517 SU-002. The surveillance report is contained in Attachment 8. A listing of survey units that warranted further investigation is provided as Table 2. Soil sample survey maps for the former Building 517 Site, Building 707 Triangle Area (707 Area), Shack 79/80, and North Pier are included in Attachment 3.

**TABLE 2**  
**SURVEY UNITS RECOMMENDED FOR RESAMPLING**

Area	Survey Unit	Sample Numbers	Date Collected	COC Radiological Technician
517	2	123-158	10-Apr-12	Jeff Rolfe
707	9	59-78	08-Jun-11	Jeff Rolfe
707	16	67-86	07-Jun-11	Jeff Rolfe
707	17	64-83	08-Jun-11	Jeff Rolfe
707	22	81-100	12-Aug-12	Anthony Smith
707	23	5-24	31-Jul-12	Jeff Rolfe
North Pier	1	28-47	31-May-12	Ray Roberson
North Pier	7	30-49	04-Jun-12	Justin Hubbard
North Pier	8	32-51	31-May-12	Ray Roberson
North Pier	10	27-46	31-May-12	Ray Roberson
North Pier	11	27-46	31-May-12	Ray Roberson
79/80	2	3, 5-6, 8-22	04-Apr-12	Jeff Rolfe

### Examination of North Pier

The North Pier had been covered by crushed asphalt at the conclusion of remediation several months earlier; however, it was evident where samples had been collected as part of the investigative process. A test pit was dug to a depth of 3 feet bgs. The soil beneath the asphalt was a mixture of rocks, gravel, and clays, and was not consistent throughout the area. Results from the test pit on the North Pier are shown in the following Table 4, and sampling locations are shown on Figure 3. Photographs are provided in Attachment 10. No results at any depth were comparable to the anomalous soil samples with low concentrations of K-40, Ra-226, and progeny.

**TABLE 4**  
**NORTH PIER TEST PIT SAMPLES COLLECTED TO A DEPTH OF 3 FEET**

Sample ID	K-40 (pCi/g)	Ra-226 (pCi/g)	Cs-137 (pCi/g)	Bi-214 (pCi/g)	Pb-214 (pCi/g)
07A-SB04-002	13.73	0.5723	0	0.5101	0.4946
02ANPR-1100	6.796	0.3756	-0.01209	0.0923	0.2235
02ANPR-1101	9.391	0.3323	-0.008652	0.2755	0.4686
02ANPR-1102	9.294	0.4989	-0.006876	0.4131	0.3777
02ANPR-1103	6.227	0.3655	-0.0004954	0.09775	0.1739
02ANPR-1104	8.076	0.3324	0	0.3696	0.2369
02ANPR-1105	8.011	0.1466	0	0.3387	0.3623
02ANPR-1106	10.64	0.5653	-0.006999	0.3513	0.4925
02ANPR-1107	10.51	0.4341	0.007666	0.3817	0.5214
02ANPR-1108	17.77	1.359	0.01339	0.4399	0.5899
02ANPR-1109	6.758	-0.1163	-0.004885	0.1066	0.2448
02ANPR-1110	7.906	0.4756	0.004713	0.143	0.2897
02ANPR-1111	7.847	0.5883	0.001557	0.3008	0.3195

Investigation of Anomalous Soil Samples at EPCIS Area

Investigation Conclusion

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Anita Singh

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Anita Singh